

AMENDMENTS TO THE CLAIMS

Claims 1-36 were filed originally.

Claims 19-20 are canceled.

Claim 21 is amended.

No new claims are added.

Accordingly, claims 1-18 and 21-36 remain pending.

1. (Original) A method for coding video data according to layered  
coding techniques in which the video data is represented as multi-layered frames,  
each frame having multiple layers ranging from a base layer of low quality to  
enhancement layers of increasingly higher quality, the method comprising:

forming a base layer for frames in the video data; and

forming multiple enhancement layers for the frames by (1) predicting even  
frames from even enhancement layers, but not odd enhancement layers, of  
preceding odd frames and (2) predicting odd frames from odd enhancement layers,  
but not even enhancement layers, of preceding even frames.

2. (Original) A method as recited in claim 1, further comprising  
storing the base layer and the enhancement layers in memory.

3. (Original) A method as recited in claim 1, further comprising:

transmitting the base layer over a network; and

transmitting one or more of the enhancement layers over the network  
according to bandwidth availability on the network.

1           4. (Original) A method as recited in claim 1, further comprising  
2 recovering the video data from the base layer and any enhancement layer.

3  
4           5. (Original) A method as recited in claim 4, further comprising  
5 reconstructing a missing enhancement layer from an enhancement layer of a  
6 reference reconstructed frame.

7  
8           6. (Original) A computer-readable medium having computer-  
9 executable instructions, which when executed on a processor, direct a computer to  
10 perform the steps of claim 1.

11  
12          7. (Original) A method for coding video data according to layered  
13 coding techniques in which the video data is represented as multi-layered frames,  
14 each frame having multiple layers ranging from a base layer of low quality to  
15 enhancement layers of increasingly higher quality, the method comprising:

16           forming a base layer for frames in the video data; and  
17           forming at least first, second, and third enhancement layers by (1)  
18 predicting even frames from the base layer and the second enhancement layer, but  
19 not the first enhancement layer or the third enhancement layer, of preceding odd  
20 frames and (2) predicting odd frames from the base layer and the third  
21 enhancement layer, but not the second enhancement layer, of preceding even  
22 frames.

23  
24          8. (Original) A method as recited in claim 7, further comprising  
25 storing the base layer and the enhancement layers in memory.

1  
2       9. (Original) A method as recited in claim 7, further comprising:  
3           transmitting the base layer over a network; and  
4           transmitting one or more of the enhancement layers over the network  
5 according to bandwidth availability on the network.

6  
7       10. (Original) A method as recited in claim 7, further comprising  
8 recovering the video data from the base layer and any enhancement layer.

9  
10      11. (Original) A method as recited in claim 10, further comprising  
11 reconstructing a missing enhancement layer from an enhancement layer of a  
12 reference reconstructed frame.

13  
14      12. (Original) A computer-readable medium having computer-  
15 executable instructions, which when executed on a processor, direct a computer to  
16 perform the steps of claim 7.

17  
18      13. (Original) A method for coding video data, comprising:  
19           encoding frames of the video data into a base layer of low quality; and  
20           encoding the frames of the video data into multiple enhancement layers of  
21 increasingly higher quality such that the enhancement layers of even frames are  
22 predicted from even layers, but not odd layers, of preceding odd frames and the  
23 enhancement layers of odd frames are predicted from odd layers, but not even  
24 layers, of preceding even frames.

1       14. (Original) A method as recited in claim 13, further comprising  
2       storing the base layer and the enhancement layers in memory.

3  
4       15. (Original) A method as recited in claim 13, further comprising:  
5       transmitting the base layer over a network; and  
6       transmitting one or more of the enhancement layers over the network  
7       according to bandwidth availability on the network.

8  
9       16. (Original) A method as recited in claim 13, further comprising  
10      decoding the base layer and the one or more enhancement layers into the video  
11      data.

12  
13      17. (Original) A method as recited in claim 16, further comprising  
14      reconstructing a missing enhancement layer from an enhancement layer of a  
15      reference reconstructed frame.

16  
17      18. (Original) A computer-readable medium having computer-  
18      executable instructions, which when executed on a processor, direct a computer to  
19      perform the steps of claim 13.

20  
21      19. (Canceled)

22  
23      20. (Canceled).

24  
25      21. (Currently Amended) A method as recited in claim 19, comprising:

1        encoding video data into multi-layered frames where each frame has a base  
2        layer of low quality to enhancement layers of increasingly higher quality and  
3        selected enhancement layers in a current frame are predicted from at least one  
4        lower quality layer in a reference frame that is not the base layer, wherein the  
5        encoding comprises predicting even frames from even layers of preceding odd  
6        frames and predicting odd frames from odd layers of preceding even frames; and  
7        transmitting the base layer and one or more of the enhancement layers over  
8        a network.

9  
10      22. (Original) A method comprising:

11        encoding video data into multi-layered frames where each frame has a base  
12        layer of low quality to enhancement layers of increasingly higher quality, the  
13        enhancement layers including at least first, second, and third layers, and the  
14        encoding comprises predicting even frames from the base and second layers of  
15        preceding odd frames and predicting odd frames from the base and third layers of  
16        preceding even frames; and

17        transmitting the base layer and one or more of the enhancement layers over  
18        a network.

19  
20      23. (Original) A method as recited in claim 22, further comprising:

21        receiving the base layer and the one or more enhancement layers from the  
22        network; and

23        decoding the base layer and the one or more enhancement layers to recover  
24        the video data.

1       24. (Original) A method as recited in claim 22, further comprising  
2       reconstructing a missing enhancement layer from an enhancement layer of a  
3       reference reconstructed frame.

4  
5       25. (Original) A computer-readable medium having computer-  
6       executable instructions, which when executed on a processor, direct a computer to:  
7              construct a base layer for frames in the video data; and  
8              construct multiple enhancement layers for the frames in the video data by  
9       predicting even frames from even layers, and not odd layers, of preceding odd  
10      frames and predicting odd frames from odd layers, and not even layers, of  
11      preceding even frames.

12  
13       26. (Original) A computer-readable medium as recited in claim 25,  
14       further having instructions that direct a computer to store the base layer and the  
15       enhancement layers in memory.

16  
17       27. (Original) A computer-readable medium as recited in claim 25,  
18       further having instructions that direct a computer to:  
19              transmit the base layer over a network; and  
20              transmit one or more of the enhancement layers over the network according  
21       to bandwidth availability on the network.

22  
23       28. (Original) A computer-readable medium as recited in claim 25,  
24       further having instructions that direct a computer to recover the video data from  
25       the base layer and any of the enhancement layers.

1  
2        29. (Original) A computer-readable medium as recited in claim 28,  
3 further having instructions that direct a computer to reconstruct a missing  
4 enhancement layer from an enhancement layer of a reference reconstructed frame.

5  
6        30. (Original) A computer-readable medium having computer-  
7 executable instructions, which when executed on a processor, direct a computer to:  
8              construct a base layer for frames in the video data; and  
9              construct multiple enhancement layers for the frames in the video data,  
10 where the enhancement layers include at least first, second, and third layers of  
11 increasingly higher quality video data than the base layer, by predicting even  
12 frames from the base and second layers of preceding odd frames and predicting  
13 odd frames from the base and third layers of preceding even frames.

14  
15        31. (Original) A computer-readable medium as recited in claim 30,  
16 further having instructions that direct a computer to store the base layer and the  
17 enhancement layers in memory.

18  
19        32. (Original) A computer-readable medium as recited in claim 30,  
20 further having instructions that direct a computer to:  
21              transmit the base layer over a network; and  
22              transmit one or more of the enhancement layers over the network according  
23 to bandwidth availability on the network.

1       33. (Original) A computer-readable medium as recited in claim 30,  
2 further having instructions that direct a computer to recover the video data from  
3 the base layer and any of the enhancement layers.

4  
5       34. (Original) A computer-readable medium as recited in claim 33,  
6 further having instructions that direct a computer to reconstruct a missing  
7 enhancement layer from an enhancement layer of a reference reconstructed frame.

8  
9       35. (Original) A video coding system comprising:  
10           a base layer encoder to encode frames of video data into a base layer;  
11           an enhancement layer encoder to encode the frames into multiple  
12 enhancement layers of higher quality than the base layer; and  
13           wherein the enhancement layer encoder predicts even frames from even  
14 layers, and not odd layers, of preceding odd frames and predicts odd frames from  
15 odd layers, and not even layers, of preceding even frames.

16  
17       36. (Original) A video coding system, comprising:  
18           a base layer encoder to encode frames of video data into a base layer;  
19           an enhancement layer encoder to encode the frames into multiple  
20 enhancement layers of higher quality than the base layer, the multiple  
21 enhancement layers including at least first, second, and third layers; and  
22           wherein the enhancement layer encoder predicts even frames from the base  
23 and second layers of preceding odd frames and predicts odd frames from the base  
24 and third layers of preceding even frames.